Remarks

The Applicants note with appreciation the Examiner's helpful comments with respect to objections to Claims 14, 17, 19, 22 and 23. Appropriate corrections have been made. Withdrawal of the objections is respectfully requested.

Claims 13, 14, 18, 19, 21, 22 and 23 stand rejected under 35 USC §112 as being indefinite. The Applicants have amended independent Claims 11, 16 and 17 to remove the "consisting of" language. This cures the §112 rejection of Claims 13, 14, 18, 19, 21, 22 and 23. Withdrawal of the rejection is respectfully requested.

The Applicants have now included the "comprising" transitional phrase and have also specified that the composition is "free of V." Support may be found on page 14, at line 2, for example. Entry into the official file is respectfully requested.

Claims 11-19 stand rejected under 35 USC §103 over JP '941. The Applicants note with appreciation the Examiner's detailed comments hypothetically applying JP '941 against those claims, particularly with respect to paragraph [0031] of JP '941. However, the Applicants respectfully submit that JP '941 actually leads those skilled in the art away from the subject matter of Claims 11-29. Details reasons are set forth below.

A relevant portion of the rejection states as follows:

> Note that JP-041 [sic] in paragraph [0031] teaches Nb and Ti have the same function as V to improve drawability, but Nb and Ti alone without V do not fully improve deep drawability.

Importantly, the rejection also states that:

> Note that the omission of vanadium with retention of vanadium's function would be indicia of unobviousness.

The Applicants respectfully submit that they have indeed removed vanadium and surprisingly and unexpectedly found that the functionality of vanadium is, in fact, retained. This can be seen by reference to both the Applicants' Specification and JP '941 and several of the characteristics of the steel sheets of the Applicants' Specification and JP '941.

For example, one of the indicia of retention of the functionality of vanadium is the Lankford value (r value). Another is elongation. These are important factors evidencing deep drawability.

Reference to the Applicants' Tables, such as Table 2-1 and Table 2-2, shows that the Applicants' steels that contain both Nb and Ti, but no V, indeed retain the deep drawability functionality associated with the presence of V, as taught by JP '941. For example, steel sheet No.'s 31 and 32, for example, have elongation of 38 and 37%, respectively, and r values of 2.1 and 2.1, respectively. Again, these are for steels that contain both Nb and Ti, but no V. Others of the Applicants' examples contain similar elongation values and/or r values to varying degrees, all of which are in the high r value category or the excellent elongation category.

Then, moving to JP '941, it can been seen that the elongation values for Examples No.'s 5, 8, 12 and 17 which contain V, B, and Ti. Collectively, those examples have an elongation of 30.0. This is compared to the Applicants' examples which contain Nb and Ti (but not any V) which collectively average more than 31%. Sheet No.'s 31 and 32 have an average elongation of 37.5%. In any event, this clearly shows that an important indicia of deep drawability is not only met by the Applicants, but actually exceeds that of JP '941.

As noted above, another indicia is the r value. The Applicants' r values are more varied, but readily match those of JP'941 in many instances and actually exceed the r value of JP '941 in several instances. Therefore, the Applicants respectfully submit that JP '941 and the Applicants'

Specification factually verify that the Applicants do not employ vanadium yet have been able to retain the functionality of vanadium. The Applicants respectfully submit that this is completely unexpected and surprising and, as indicated in the Official Action itself is "indicia of unobviousness."

This is even more compelling when the entirety of paragraph [0031] is considered. The Applicants reproduce the entirety of that paragraph for the Examiner's convenience.

> Nb: 0.001-0.3% and Ti: 1 of 0.001 to 0.3% of sorts and two sorts are contained: 0.3% or less in total, And [sic] the things Nb and Ti which V, Nb, Ti and C fulfill for the relation which becomes 0.5xC/12 <=(V/51+2xNb/93+2xTi/48)<=3xC/12 are carbide formation elements like V, and have the same operation as V mentioned above. Namely, by carrying out deposit immobilization by using dissolution C as Nb and Ti carbides before recrystallization, {111} recrystallization texture is developed and a high r value can be obtained. The dual-phase-steel board which has the complex tissue of a ferrite and martensite can be obtained by dissolving Nb and Ti carbides furthermore at the time of annealing in the two-phase region of alpha-gamma, condensing an austenite phase so much and carrying out the martensitic transformation of the dissolution C in a subsequent cooling process. However, the effect which Nb and Ti mentioned abouve cannot fully improve the deep drawability which is an effect of this invention only by adding only Nb and Ti without becoming [V], and adding V in steel slab, since it is small.

The Applicants invite the Examiner's attention to the last sentence in particular wherein JP '941 actually leads those skilled in the art away from omitting V. That portion of paragraph [0031] admits that Nb and Ti cannot achieve the desired deep drawability functionality. Therefore, that objective can only be achieved by the addition of V with the option of adding Nb and Ti. The Applicants respectfully submit that one skilled in the art would not have a reasonable expectation that the favorable deep drawability achieved in JP '941 would be possible by omitting V. JP '941 explicitly states in the last sentence of paragraph [0031] that just adding Nb and Ti are not good enough to achieve deep drawability. This is because V is deemed to be critical as stated in the

first two lines in paragraph [0029] which states that V is "the most important element of this invention."

Thus, those skilled in the art are faced with a disclosure that explicitly states that employing V is essential and then states that adding Nb and Ti alone, without V, cannot achieve the deep drawability. The Applicants respectfully submit that this would not provide one skilled in the art with motivation to modify JP '941 by eliminating V. In fact, JP '941 teaches just the opposite. JP '941 states that V is critical and states that Nb and Ti alone are insufficient to improve deep drawability. The Applicants respectfully submit that when prior art teaches in one direction and a patent applicant proceeds at exactly the opposite direction as taught by the prior art, that this is compelling evidence of non-obviousness.

Then, the Applicants have factually demonstrated through the examples in the Specification as compared to the examples in JP '941 that the functionality of V has been retained by the Applicants without the use of V. This is completely unexpected and as noted in the Official Action is "indicia of unobviousness." The Applicants therefore respectfully submit that they have provided two bases upon which the above-solicited claims are non-obvious. Withdrawal of the rejection is respectfully requested.

In light of the foregoing, the Applicants respectfully submit that the entire Application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,

T. Daniel Christenbury
Reg. No. 31,750
Attorney for Applicants

TDC/vp
(215) 656-3381